

EPIGENETIC IMPACT OF COMMUTING TO WORK BY CAR OR USING PUBLIC TRANSPORTATION: A CASE-CONTROL STUDY

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Background and Aims: Using public transportation (PT) entails more physical activity and energy expenditure during the commute than driving cars. We assessed here whether these two types of commuters have different levels of inflammatory response, and eventually different cardiovascular and cancer risks.

Methods: We compared adults commuting to Queens College, New York, whose normal commute was either by car (n=79) or using PT (n=101). To maximize differences, the two groups were randomly sampled without attempt to match on socio-demographical factors. Besides questionnaires about their diet, physical activity and perceived stress and measured weight and height, we measured white blood cell (WBC) counts, C reactive protein (CRP) and DNA global Line-1 methylation.

Results: Preliminary results show that, as expected, the two commuter types vary greatly by age, BMI, physical activity, ethnicity and diet. There are however no differences in median WBC, (car=6700 cells/mm³; PT=6400, p=0.30) in CRP, (car=1.18 mg/dl; PT=1.26, p=0.65) and in Line-1 DNA methylation, (car=78.2%; PT=78.3%, p=0.73).

Conclusions: Levels of inflammatory response and DNA methylation do not appear to differ according to commute modes even when conditions are set to maximize the observed differences if any.

References: Morabia A, Amstislavski PN, Mirer FE, Amstislavski TM, Eisl H, Wolff MS et al (2009). Air pollution and activity during transportation by car, subway, and walking. *Am J Prev Med* 37:72-77.

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